

Research Article**THE INFLUENCE OF EXTRACURRICULAR SPORTS ACTIVITIES ON CHANGES IN BASIC MOTOR SKILLS OF FOURTH GRADE ELEMENTARY SCHOOL STUDENTS****Elvira Nikšić, Indira Mahmutović and Armen Klino**¹ Faculty of Educational Science, University of Sarajevo, Sarajevo, Bosnia and Herzegovina² Faculty of Sport and Physical Education, University of Sarajevo, Bosnia and Herzegovina**Received 28th April 2022; Accepted 24th May 2022; Published online 30th June 2022**

Abstract

In modern society, which is characterized by many positive and negative changes, physical and health culture is becoming increasingly important. The need for systematic and quality leisure time from the earliest days stems not only from the changed lifestyle, but also from the fact that in modern living and working conditions are increasingly endangered functions and abilities of the body that can be quickly and efficiently changed by physical and health culture. , develop and improve. The aim of this research is to determine the impact of extracurricular sports activities on the development of motor skills of 4th grade elementary school students. The research was conducted on a sample of N = 40 respondents, divided into two subsamples, group A and group B. 20 students who engage in extracurricular sports activities in addition to teaching physical education and health GR-A and 20 students who do not engage in extracurricular sports activities in addition physical education and health classes GR-B. To assess motor skills, 4 variables were used, of which 2 were variables for flexibility assessment: Forward bend on the bench(MPKKL), Right bend on the bench (MPKDS) and 2 repetitive strength assessment variables: Swedish bench torso lift (MPTSK) and Hinges on the crossbar by undertaking. (MZNPP). Descriptive statistics were used for data processing, and univariate analysis of variance (ANOVA) was used to determine differences. The results of the research showed that additional extracurricular sports activities led to the improvement of motor skills (flexibility and repetitive strength). It was found that there are statistically significant differences between group A and group B in the variables Right bend on the bench (MPKDS), Swedish bench torso lift (MPTSK) and Hinges on the crossbar by undertaking. (MZNPP) for the benefit of group A, ie students who, in addition to teaching physical education and health, engage in extracurricular sports activities. The goal of extracurricular activities is to include as many students as possible, regardless of their abilities, to identify psychomotor gifted students and direct them to sports schools and clubs. Creating a constant need for physical exercise, ie a constant habit of playing sports, such amounts of psychomotor and other life knowledge will be adopted, the value of which will significantly participate in the development of anthropological characteristics of young people and keep them at a high level until late life.

Keywords: Extracurricular sports activities, Physical education, Motor skills, Students.

INTRODUCTION

According to Prskalo (2004), motor abilities are latent motor structures that are responsible for a practically infinite number of manifest motor reactions and can be assessed and described. These are abilities that participate in solving motor tasks and condition successful movement. Kosinac (2011) states that the development of movement is closely related to the development of motor skills. Adopted motor structures have an impact on the development of motor skills. Also, the development of one part of motor skills is significantly influenced by genetic factors, while the other part is influenced by various exogenous factors (play, sports training, physical exercise...). Repetitive strength is the ability to perform individual and repeat some simple movements or bodies, and can develop the most, given that the coefficient of orderliness is very low. When talking about repetitive power, it is very important to take into account the level of load and articulate the duration (Malacko and Rado, 2004). Repetitive strength is defined as the ability to work for a long time based on alternating contractions and muscle relaxations (arms and shoulder girdle, torso, legs). It is necessary to overcome the external load that does not exceed 75% of the maximum. That form of repetitive power in which we overcome external resistance is absolute repetitive power.

If we repeatedly master the weight of our own body, it is a matter of relative repetitive strength. The development of repetitive strength is most often related to work in the gym where a large number of training devices have been developed that are designed for targeted work of individual muscle groups, so with properly programmed training processes repetitive strength can be developed very successfully, and its development is possible also at a later age. We can test repetitive strength with the maximum number of pull-ups, push-ups or squats we can do. Sports in which repetitive strength is more significantly represented are: gymnastics, mountaineering, rowing, cycling, etc. Flexibility as motor ability can be defined as the extent of possible movement in a particular joint, especially in the hip joint, or in a series of joints, such as in the spine (Rađo *et al.*, 2000). Flexibility is a characteristic of a human, and mobility is a characteristic of a joint. Flexibility is defined as the ability of the locomotor system to perform movements of optimal amplitude in a joint or series of joints, and this ability depends primarily on the structure of the articular bodies and ligaments involved in the movement. Flexibility is specific to each joint, so some joints may be more and some less flexible. Since it is almost impossible to influence the development of the morphological structure of the joints in later life, the development of this ability is exclusively affected at a very early age (from the age of 5), while the locomotor system is still in development. If we practice flexibility in later life (after morphological development is complete) the results will be significantly

***Corresponding Author: Elvira Nikšić,**

Faculty of Educational Science, University of Sarajevo, Sarajevo, Bosnia and Herzegovina.

weaker. An illustration of the development of mobility is rhythmic gymnastics and women's sports gymnastics, in which top results are most often achieved at an extremely early age when this ability is at its maximum. In later life, it is possible to partially slow down the reduction of flexibility, so flexibility exercises are regularly used in almost every workout in the form of various stretching exercises, stretching and the like. In sports training, increasing mobility significantly reduces the possibility of injury to ligaments and muscles, and improves overall stability. In addition to motor skills, flexibility also carries anthropometric characteristics. From the physiological aspect, flexibility is conditioned by: the structure of the joint, the elasticity and quality of the connective tissue and the degree of irritation of the muscle tissue. In addition, flexibility is affected by temperature, age, gender, time of day, muscle fatigue, etc. If you do not exercise systematically, it decreases rapidly with age. Flexibility is a characteristic of a human, but it has no general property. It is a characteristic of the joint, conditioned by the anatomical structure of the bone and ligament elements and the elasticity of the muscles. Active (dynamic) mobility is achieved by contraction or decontraction of the muscles responsible for movement, while passive (static) mobility is characterized by the extent of possible movement under the action of a force. This ability needs to be developed as much as necessary to maintain optimal mobility and strength of the locomotor system, spine, shoulder and pelvic girdle. Shaping exercises (elegance, strengthening and relaxation) are used, as well as stretching. Their regular, systematic and correct implementation achieves: improving the level of flexibility and other motor skills, reducing muscle tension, improving muscle and intermuscular coordination, improving coordination and efficiency of motor learning, reducing fatigue, reducing the risk of injury, improving blood circulation and other regenerative processes, reducing muscle and mental tension, improving mental concentration, improving the functions of the autonomic nervous system and the functioning of internal organs, raising levels of self-awareness, etc. (Findak and Prskalo, 2004). According to Grosser and Schönborn (2008), flexibility is naturally well developed at the age of 9 and it can be stated that the spinal column in particular is very flexible. At the age of 10, the first limitations in the area of the hips appear, especially when it comes to the amplitude of movement in abduction and dorsal mobility of the shoulder joint. The authors consider the skeletal system to be the most endangered at this age and one of the weakest links in the organism. The program of physical education and health contains organizational forms of work that are mandatory for all students, namely physical and health education class, physical and health education class according to a special program, extracurricular activities, competitions, excursions, camps and events (Findak, 2001). Free time is the time in which an individual is relieved of jobs, obligations and duties towards the family, school, work organization or the wider community. Free time is the time of activities, but these activities are freely directed by the individual. When leisure activities are properly pedagogically oriented, then they are often in the function of maintaining health and proper physical development. Nowadays, more and more time is spent at home with family, friends, and less and less on recreational sports. An adult should guide and activate his children from the earliest days in culture, sports, art or other areas. In this way, the child develops the need to learn, experience and create. The school also has a great influence on guiding students towards the proper use of free time. The school, as an educational institution, enables the child or student to discover himself, and

most of all to continue to develop his own abilities. Free time should be used in the most appropriate way to contribute to our health, better life and proper development (Puževski, 2002). Each activity in its implementation requires an appropriate organization that goes through several phases, from planning, programming, implementation to evaluation of the work program. The principle of organization ensures successful, unobtrusive and unhindered execution of certain activities in the leisure program (Rosić, 2005). The goal of the research of construction and validation of one measuring instrument for the evaluation of repetitive strength of all body parts, was conducted on 29 students at the age of 14. The variables were made of usual tests for the evaluation of repetitive strength: sit ups; lifting legs while lying; hull shelter while lying and chin-ups venture. Reliability of the measuring instrument is examined with t-test and determined that the test is highly reliable even though that characteristic should be examined on a more homogeneous sample (Mikulić and Oreb, 2006). The school is an institution that must enable children to properly develop all their abilities and prepare them for active participation in society. The influence of school has a great development on individual students (Šiljković, Rajić and Bertić, 2007). The immediate goals of physical exercise behavior relate to learning to perform various movements, acquiring motor skills, improving the functional and motor abilities of the organism, maintaining physical appearance (Sindik, 2008). Anthropological features are organized systems of all characteristics, abilities and motor information, and their mutual relations. Anthropological characteristics include anthropometric characteristics, motor, functional and cognitive abilities, conative or personality traits and social status. Anthropometric or morphological characteristics describe the structural features of the human body. They are part of anthropological characteristics that are defined as traits responsible for the dynamics of growth and development (bone growth in length and width, muscle mass, subcutaneous adipose tissue) (Findak and Prskalo, 2004). Sport in the educational sense can be defined as a kinesiological activity of students of which only they decide, because they conduct them during their free time. From an educational point of view, self-initiated exercise creates the habit of regular physical exercise. From the transformational - coordination point of view, this type of physical activity is an extremely significant activity of children and youth (Neljak, 2013).

MATERIALS AND METHODS

Participants

The sample of respondents, named as GR-AB, includes 40 students, divided into two subsamples, as follows: a subsample of 20 respondents who are involved in extracurricular physical education classes, engaged in extracurricular sports activities, appointed as GR-A, and a subsample of 20 respondents who, in addition to two hours of regular physical and health education classes per week, are not involved in extracurricular sports activities, designated as GR-B. The initial classification was made solely on the basis of the involvement or non-involvement of students in extracurricular sports activities.

The sample of variables

The tests were extracted from a battery composed of 110 tests, arranged in 23 subsets, constructed to cover a hypothetical model of the structure of psychomotor abilities defined by

Kurelić et al. (1975). The battery was tested on a representative sample of the Yugoslav population. It has been modified several times, in order to obtain satisfactory measurement characteristics of the entire system.

The following measuring instruments were used in the research:

Flexibility assessment variables (MFL):

- Forward bend on the bench (MPKKL)
- Right bend on the bench (MPKDS)

Repetitive strength assessment variables (MFR)

- Swedish bench torso lift (MPTSK)
- Hinges on the crossbar by undertaking (MZNPP)

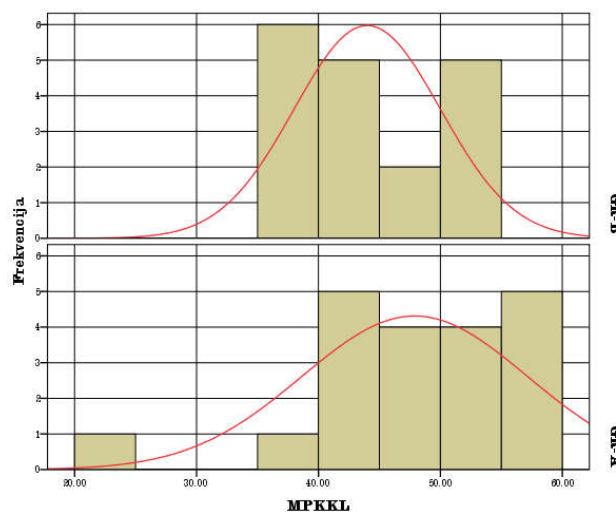
Statistical Analysis

Descriptive statistics were used for data processing, and univariate analysis of variance (ANOVA) was used to determine differences. The statistical program for personal computers SPSS for Windows version 22 was used for data processing. The level of inference was set to $p < 0.05$.

RESULTS

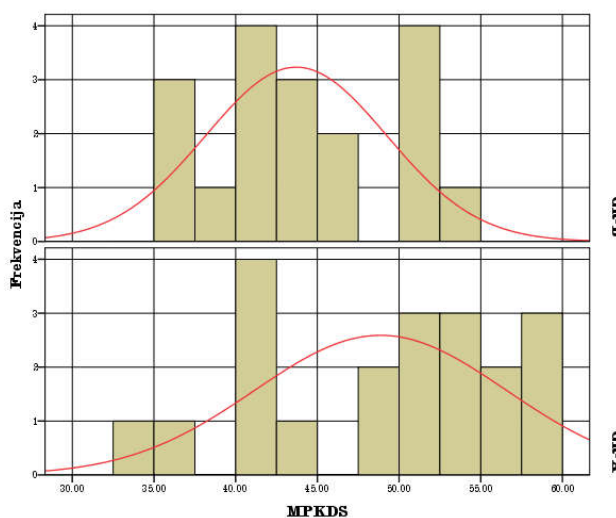
Table 1 shows the descriptive parameters of the variables (GR-A, GR-B, GR-AB); AS - arithmetic mean; 95% IPAS - 95% confidence interval in AS; Median; Std. Dev. - standard deviation, Min. - Minimum value and Max. - Maximum value. On the variable Forward bend on the bench (MPKKL), Right bend on the bench (MPKDS), Swedish bench torso lift (MPTSK), Hinges on the crossbar by undertaking (MZNPP), a higher value means a better result, which estimates repetitive strength and flexibility. Some data sets are best represented by the mean or average value, which achieves the largest number of entities in the sample and in the population, and some mean values, such as arithmetic mean, median and mode, are calculated in the case of quantitative variables, while others, such as median (medial value, which is located exactly in the middle of a series of data sorted by size) and mode (dominant value, which most often appears in a series of results), are used in quantitative variables. According to the characteristics of the histogram GR-A and GR-B on the variable forward bend on the bench (MPKKL), it is noticeable that GR-B is more homogeneous, and the results are distributed below the Gaussian curve closer to the arithmetic mean of GR-B.

In the case of GR-A, the results were moved to a zone of better results. It can be assumed that the greater dispersion of GR-A results, as well as the situation of GR-A results in the zone of better results, is a consequence of previously applied exercises.



Histogram 1. Frequencies for the MPKKL variable

On the right bend on the bench variable (MPKDS) there is a statistically significant difference between GR-A and GR-B in favor of GR-A, which is visible on the histogram of reflections. This means that additional exercise contributed to the differentiation of the groups.



Histogram 2. Frequencies for the MPKDS variable

Table 1. Descriptive parameters of variables

Variables	Group	95% IPAS			Me	Std.Dev.	Min.	Max.
		AS	Lower	Higher				
MPKKL	B	44.0000	41.0114	46.9886	42.0000	6.00980	36.00	53.00
	A	47.8900	43.5599	52.2201	48.5000	9.25213	20.00	59.00
MPKDS	B	43.7056	40.9441	46.4671	43.3000	5.55311	36.00	54.00
	A	48.8650	45.2599	52.4701	51.0000	7.70306	34.00	59.50
MPTSK	B	16.2944	10.5477	22.0411	14.1500	11.55608	1.50	44.00
	A	34.5500	29.6450	39.4550	36.2500	10.48043	14.00	47.50
MZNPP	B	1.1111	.6320	1.5902	1.0000	.96338	.00	3.00
	A	2.3500	1.6174	3.0826	2.0000	1.56525	.00	6.00

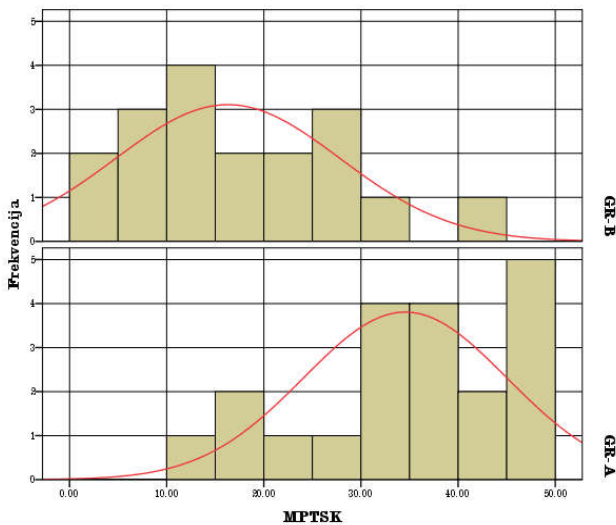
Legend: 95% IPAS - 95% trust interval in AS, AS - Arithmetic mean, Me - Median, Std.Dev. - Standard deviation, Min. - Minimum value, Max. - Maximum value, MPKKL - Forward bend on the bench, MPKDS - Right bend on the bench, MPTSK - Swedish bench torso lift, MZNPP - Hinges on the crossbar by undertaking

Table 2. Identifying differences between groups in variables for the assessment of flexibility and repetitive strength

Variables			Squares sum	df	Medium square	F	Sig.
MPKKL * GROUPS	Between the groups	(Combined)	143.357	1	143.357	2.303	.138
		In groups	2240.438	36	62.234		
		Total	2383.795	37			
MPKDS * GROUPS	Between the groups	(Combined)	252.188	1	252.188	5.497	.025
		In groups	1651.635	36	45.879		
		Total	1903.823	37			
MPTSK * GROUPS	Between the groups	(Combined)	3157.250	1	3157.250	26.086	.000
		In groups	4357.179	36	121.033		
		Total	7514.430	37			
MZNPP * GROUPS	Between the groups	(Combined)	14.541	1	14.541	8.399	.006
		In groups	62.328	36	1.731		
		Total	76.868	37			

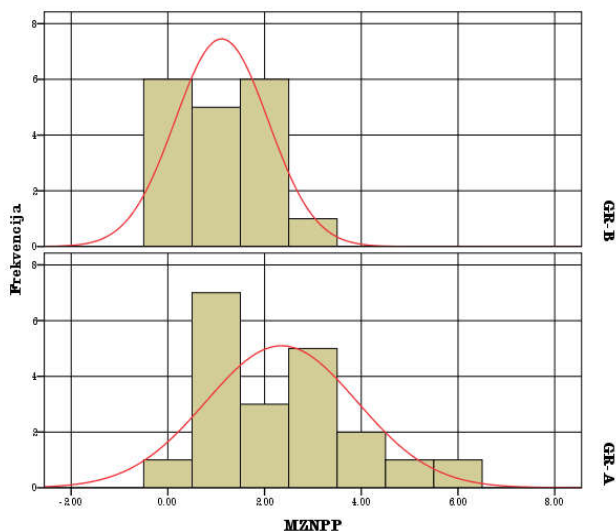
Legend: MPKKL - Forward bend on the bench, MPKDS - Right bend on the bench, MPTSK - Swedish bench torso lift, MZNPP - Hinges on the crossbar by undertaking

There is a statistical difference between GR-A and GR-B in favor of GR-A on the Swedish bench torso lift (MPTSK) variable. This means that the additional exercise contributed to the differentiation of the groups.



Histogram 3. Frequencies for the MPTSK variable

On the variable hinges on the crossbar by undertaking (MZNPP), there is a statistical difference between GR-A and GR-B in favor of GR-A, which is noticeable on the frequency histogram. The consequence of the differences are previously applied exercises.



Histogram 4. Frequencies for the MZNPP variable

ANOVA (Univariate Analysis of Variance) was used to determine the relationship between the value of variability (variance) of the results of subjects within GR-A and GR-B and the value of variability (variance) of results of subjects between GR-A and GR-B in the sample GR-AB. If the differences between GR-A and GR-B in GR-AB are statistically significantly different from the realized differences within GR-A and GR-B, it can be concluded that differences also exist in the population (children) from which GR-AB was extracted. That is, that the applied treatment (exercises) influenced such a result. The level of significance of differences (Sig.) was determined by F-test. In this particular case, statistically significant differences were found between GR-A and GR-B in GR-AB on the variables: MPKDS, MPTSK and MZNPP. The accepted risk of error is up to 5% ($p = 0.05$). The largest difference was achieved in the variable Swedish bench torso lift (MPTSK), and the smallest in the variable Forward bend on the bench (MPKKL).

DISCUSSION

The results of the study confirmed the positive impact of physical exercise on repetitive strength that can be influenced throughout life. It can be assumed that students who, in addition to regular physical education classes, are also involved in extracurricular sports activities, have contributed to this difference. Flexibility is a specific motor ability. The greatest impact on flexibility is in early youth, from the age of 5, while the locomotor system is still in development. It is assumed that GR-B subjects as well as GR-A subjects performed stretching exercises regularly. Flexibility can be maintained throughout life. The full amplitude of movement in the joint, as well as the elasticity of ligament and muscle tendons, significantly reduces the possibility of injury, improves the overall stability of the locomotor system and contributes to improving overall motor efficiency. If we compare the AS from the Descriptive Statistical Parameters, it can be concluded that the direction of the differences is in favor of GR-A. In the modern way of life, the need for kinesiological content is getting stronger and more important. The importance of extracurricular sports activities is related to caring for the health of students, stimulating their growth and development and participation in the overall personal education, as well as developing the need for meaningful use of free time and improving the quality of life. The goal of extracurricular sports activities is to include as many students as possible, regardless of their abilities. It is also important to recognize psychomotor gifted students and direct them to sports schools and clubs. Creating a constant need for physical exercise, ie a constant habit of playing sports, such amounts of

psychomotor and other life knowledge will be adopted, the value of which will significantly participate in the development of anthropological characteristics of young people and keep them at a high level until late life. Numerous researches have established that additional movement activity affects more developed anthropological status (Rašidagić & Imamović, 2018; Kondrić, Mišigoj-Duraković & Metikoš, 2002; Bavčević, Vlahović, & Božinović-Mador, 2017). Some researches have proved that there are no differences between the students nor progression after a certain cycle of exercising. So the authors (Polančec, *et al.*, 2007) on a sample of 180 students divided into groups elementary school Vinica and elementary school Klenovik according to the gravity of elementary schools they attend, by the given results they show that there are no differences in the bigger number of tests and that the populations can be treated as almost the same. On a sample of 22 examinees of the elementary schools in Zagreb, the students were monitored during two years with the help of 4 anthropometry tests, 6 motor abilities tests (polygon backwards, long jump from place, endurance in chin-up, hand tapping, sit and reach and hull lifting) and one test for functional abilities. It is confirmed that the students who could not additionally practice sports activities, in the classes of physical and health education of twice a week for 45 minutes could not significantly develop the anthropological characteristics (Sertić *et al.*, 2008).

Trošt Bobić *et al.* (2008) who have also examined 155 students of the fourth grades in three elementary schools in Rovinje. The battery of measuring instruments was made of test for evaluation of the basic motor skills (17 of them) and two morphological variables. With the discriminative analysis they did not find differences between the students who exclusively attend the physical and health education classes, and those who additionally practice some other form of organized exercising at least twice a week. An interesting research is the one where (Delija *et al.*, 2005) analyse the difference between the groups of examinees at the age of 10 to 11 included in different kinesiology activities. Subsample is consisted of three groups: athletics, students who exercise group sports and students who exercise other sports. They measured 3 anthropometric variables, 6 motor variables and one functional. With MANOVA method (analysis of quantitative differences) the conclusion is that the different kinesiology treatments made big differences between the groups of examinees, and that the most expressed results are of the students who practiced athletics. Results of this research should determine higher level of morphological and motoric status development for physically active students and confirm increased movement activity which positively affects transformation of morphological characteristics and motoric capabilities. Research like this is important since it finds out different ways to increase movement activities of female students and decreases negative effects of sedentary way of life (Jamner *et al.*, 2000). Pejčić (2001) researches 655 students from I to IV grade. The students are examined in 4 morphological variables and 6 motor variables (long jump, 20 m sprint, endurance in chin-up, hull lift and backwards polygon). The conclusion is that the girls have better results only in flexibility and that the physical and health education classes can affect the changes of morphological characteristics and motor skills. In his doctoral dissertation: "Transformational processes of motor skills and anthropological characteristics under the influence of seven-month treatment in third and fourth grade students" on a sample of 206 students, divided

into two subsamples (experimental and control) applied standard and experimental treatment lasting seven months. The results showed that the three-hour experimental treatment, performed by physical education professionals, showed better results than the standard physical education program, which was performed by primary school teachers (Skender, 2004). In their paper: "Effects of programmed teaching on improving motor skills in younger school-age students" found that programmed teaching lasting three hours per week and seven months caused positive effects on improving motor skills, which were included in testing (Skender *et al.*, 2007). Sensitive periods for speed from, looking from the age of 7, are up to the age of 16, and particularly favorable periods are between the ages of 10-14. Strength depends on morphological structures, and these are the systems responsible both for its development and for transmission and control. During adolescent development, strength increases according to physiological and chronological age, and depends on anthropometric characteristics. Maximum muscle strength depends on the physiological cross section.

The bigger it is, the bigger the strength. But strength is also affected by the density and type of muscle fibers (Prskalo, *et al.*, 2009). In a study of 153 respondents, 48 respondents participated in regular physical education classes with 2 teaching hours (the first experimental group E1), 56 respondents participated in regular physical education classes with 2 teaching hours, plus a third additional hour per week (second experimental group E2), with which teachers of physical education and health worked, and 49 respondents participated in regular physical education classes with teachers of primary education, 2 lessons per week (control group - K). There were statistically significant changes in motor skills in the final compared to the initial measurement in the experimental groups compared to the control. Based on the obtained results, it can be assumed that the correct methodological design of teaching work (means of physical exercises, workload, methods for developing certain abilities, forms and forms of work, etc.) had positive effects on motor skills when it comes to girls in third grade (Džibrić *et al.*, 2011). At the average value of MFLPRT (torso bend), by gender, male respondents achieved better results than female respondents (Nikšić *et al.*, 2017). Increasing flexibility increases overall motor efficiency and raises the stability of the locomotor system to a higher level. Flexibility is more easily developed in children and young people, so its development should be planned at the age of 11-14 (Prskalo *et al.*, 2009). Discriminatory analysis identified differences between 4th grade students who, in addition to physical education and health education, regularly practice any other sport at least twice a week (for a minimum period of six months) and those who exclusively attend physical education and health education. The results show that there are no significant differences and that they are not statistically significant in those students who only attend physical education and health classes. The results obtained by discriminant analysis can be explained by the fact that exercise twice a week is insufficient to cause significant changes in the human body, especially at this age. The obtained data indicate an important component of the training process, quantity. Namely, the quality of training is a very important factor in the training process, but with this research we have once again confirmed that in order to provoke positive reactions of the human body, quality and frequent training are necessary (Trošt Bobić *et al.*, 2008). Physically inactive female students have regularly attended PE

lessons two times a week and those who were physically active had additional training activities outside of school also two times a week. Activities lasted for 90 minutes and selected sports were basketball, volleyball, handball and football. Since physically active students practice 4 times a week it is assumed their anthropological status is on higher development level than inactive students who practice 2 times a week (Hills, King & Armstrong, 2007). The results of the research by Badrić, Prskalo, Sporiš (2015) show that after the training process lasting 8 weeks there were statistically significant changes in motor skills of girls who engaged in additional extracurricular activities in school sports society. The girls made the most progress in tests to assess explosive strength and flexibility. Additional physical activity within the work in the school sports society significantly affects the increase in the level of motor skills. Nićin (2000) and Petković (2007) show that additional physical activity increases the positive effects of both physical development and basic motor skills. In the conducted research, anthropometric measures and motor abilities were assessed on a sample of 47 third grade students who are engaged in additional physical activity and who participate only in regular physical education classes. The results showed that students who engage in additional physical exercise have significantly better results in motor skills. The results of the t-test in the area of motor skills show significant differences that appear in the variables for assessing explosive, repetitive and static strength in favor of students who additionally exercise. Also, statistically significant differences were found in the variables for estimating the flexibility and speed of simple movements (Gašparić, 2015). Thanks to the positive health effects of physical exercise, physical education is an integral part of the education system, with two hours per week, which is insufficient to achieve an optimal effect in transforming the anthropological status of children.

The aim of the research was to determine the effects of regular and modified physical education with the application of contents from sports games (basketball, volleyball and handball) in the duration of one semester to changes in basic motor skills in pupils of the fifth grade of elementary school. The study included $N = 106$ students of the V class, aged 10 to 11 years, clinically and mentally healthy, and with no pronounced morphological and locomotor impairments. The sample of examinees was divided into two subgroups. The first was an experimental group of 53 students, who carried out physical education classes according to the modified plan and program of sports games (basketball, volleyball and handball) for a semester. The other was a control group of 53 students who attended regular classes from physical education according to the current curriculum. The results of the research at the descriptive level showed noticeable differences between the same groups in the final versus the initial measurements. Based on the results of the t-test for the control and experimental group, it can be concluded that there have been statistically significant changes in values on all variables of basic motor in the final compared to the initial measurement. By analyzing the results of the t-tests, it can be seen that the groups differ in the initial measurement only in one basic motor variable, MTAPN, and this difference is statistically significant in favor of the control group. In the final measurement, there are no significant differences between the control and the experimental group in the average values of all variables of basic motor. Improving basic motor skills depends on the teacher's ability, the ability to transform the age with which he is working, and the success of certain

training processes. The modified program of the experimental group has led to changes and thus proves the significant effect of the group's work program. Keywords: physical education, modified program, sports games, motor skills, students (Nikšić *et al.*, 2019). This research was done as continuation of research made previously on male population. The goal of this research is to determine „differences between morphological characteristics and motoric capabilities of physically active and inactive female students “. Sample of physically inactive female students was made of 54 examinees and sample for active students was made of 52 girls. Average age was 12. All girls were primary school students. Physically inactive students regularly attended PE lessons and active students were involved in training process of basketball, volleyball, football and handball teams. Additional practice was done two times a week for 90 minutes. Morphological space is set by 15 variables and motoric space is set with 24 variables. Statistical difference was determined by T-test on level ($p < 0.05$). Significance given by T-test was checked by calculating Eta coefficient. Such data has differences in Chest Width (.00/.00 and $\eta^2 = 0,33$), Weight (.00/.00 and $\eta^2 = 0,34$), Stomach Skin Curves (.00/.00 and $\eta^2 = 0,37$) and Back Skin Curves (.05/.05 and $\eta^2 = 0,16$). Motoric space has differences in: Slalom with Three Medicine Balls (.00/.00 and $\eta^2 = 0,01$), Throwing medicine ball from the chest (.00/.00 and $\eta^2 = 0,10$), Long Jump (.00/.00 and $\eta^2 = 0,17$), Push-ups (.02/.02 and $\eta^2 = 0,05$), Sit-and-Reach (.04/.04 and $\eta^2 = 0,00$) and 20m low start run (.00/.00 and $\eta^2 = 0,14$). After analysis it can be stated the aim of the research was completed and differences of anthropological status of physically active and inactive female students were determined. Students of age 12 can be recommended additional training activity to positively transform anthropological spaces with no transformation. Research with same or similar variables should be done on different age categories when compared to this one or to analyze quality of influence that specific sports have on transformation in this age category (Rašidagić, *et al.*, 2020).

Conclusion

This research was conducted with the aim of determining the impact of extracurricular sports activities on the development of motor skills of 4th grade elementary school students. The research was conducted on a sample of $N = 40$ respondents, divided into two subsamples, group A and group B. 20 students who engage in extracurricular sports activities in addition to teaching physical education and health GR-A and 20 students who do not engage in extracurricular sports activities in addition physical education and health classes GR-B. To assess motor skills, 4 variables were used, of which 2 were variables for flexibility assessment: Forward bend on the bench (MPKKL), Right bend on the bench (MPKDS) and 2 repetitive strength assessment variables: Swedish bench torso lift (MPTSK) and Hinges on the crossbar by undertaking. (MZNPP). Descriptive statistics were used for data processing, and univariate analysis of variance (ANOVA) was used to determine differences. The results of the research showed that additional extracurricular sports activities led to the improvement of motor skills (flexibility and repetitive strength). It was found that there are statistically significant differences between group A and group B in the variables Right bend on the bench (MPKDS), Swedish bench torso lift (MPTSK) and Hinges on the crossbar by undertaking (MZNPP) for the benefit of group A, ie students who, in addition to teaching physical education and health, engage in

extracurricular sports activities. The goal of extracurricular activities is to include as many students as possible, regardless of their abilities, to identify psychomotor gifted students and direct them to sports schools and clubs. Creating a constant need for physical exercise, ie a constant habit of playing sports, such amounts of psychomotor and other life knowledge will be adopted, the value of which will significantly participate in the development of anthropological characteristics of young people and keep them at a high level until late life. The results suggest that more time should be devoted to these ages and variables in more precise programming of the training process, because the results depend on the quality and manner of work carried out with children in physical education classes. It is necessary to include as many children as possible in additional physical activities, since 2 hours a week are not enough to cause significant changes in the human body, especially at this age. The lifestyle of today's children is mostly subordinated to sitting in school, computer workshops, music schools, foreign language schools. Thus, children remain in a sitting position with minimal movement even after school. This way of life, and improper and fast food lead to the fact that the abilities of children, students, are increasingly lagging behind in relation to their physical development. From the obtained results we can conclude that, for significant transformations in the motor space, additional content is needed outside the classroom, assuming that the transformation of basic motor skills is greater when the level of motor knowledge is higher. The results show that additional involvement in kinesiological activity, in addition to regular classes, which is the basis of all organizational forms of work in this area, ensures significant transformational effects.

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